

REMARKS

Currently, claims 69, 70, 72, and 74 are pending and under examination in this application.<sup>1</sup> By this Amendment, a new Sequence Listing is provided, and independent claims 69 and 72 are amended to specifically recite a consensus sequence for a uridine binding motif. Support for the new Sequence Listing comes from the Sequence Listing originally filed with the application. Support for the amendments to claims 69 and 72 comes from throughout the specification, as originally filed, for example at page 44. Accordingly, no new matter is added by this Amendment.

I. *Objection To The Sequence Listing*

The Office objects to the Sequence Listing, asserting that it is missing sequences that are disclosed in the application. (Office Action at paragraph 2.) By this Amendment, Applicant submits a new Sequence Listing, which lists all of the sequences presented in the originally filed Sequence Listing filed with the application (*i.e.*, 89 sequences). Applicant submits that the new Sequence Listing is identical in its disclosure of sequences to that of the originally-filed Sequence Listing, and thus does not introduce any new matter. In view of the Sequence Listing filed herewith, Applicant requests that the Office withdraw this objection.

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<sup>1</sup> Applicant notes that the Office Action summary incorrectly lists the pending claims as 69, 70, and 72.

II. *Rejection Under 35 U.S.C. § 112, first paragraph*

The sole issue remaining in contention in this application is whether the claims find adequate written description support in the specification. (Office Action at paragraph 4.) The Office asserts that the claims are not supported for the terms "polymerase enhancing factor protein P45" and "polymerase enhancing factor activity". The Office recognizes that the application provides data and specific sequences for certain P45 and P50 proteins and their associated activities. The Office also recognizes that the application identifies a consensus amino acid sequence that is present in numerous proteins having dUTPase activity, including the P45 protein. However, the Office asserts that the claims do not find adequate written description support because the above-referenced phrases in the claims are not linked to any particular structure/sequence. In view of the teachings of the specification, Applicant traverses the rejection as it applies to the present claims.

The presently claimed invention recites methods that include the use of a P45 protein (independent claim 69) or a polymerase enhancing factor activity (independent claim 72). Both the protein and activity are characterized as comprising an amino acid sequence represented by SEQ ID NO:72. As the Office recognizes, SEQ ID NO:72 is identified in the application as a consensus uridine binding motif (see page 44 of the specification, for example). This structure is disclosed as being shared among at least nine organisms from eubacteria, archaea, eukaryotes, and viruses. It is thus broadly conserved evolutionarily, a fact which is borne out by its similar activity (*i.e.*, uridine binding) throughout these domains. Furthermore, the role of dUTPase in

enhancing nucleic acid polymerization reactions is discussed in the application. (See, for example, the specification at page 52.) Those of skill in the art, upon reading the present application, would immediately understand that proteins having a uridine binding motif as defined in the present claims would function according to the disclosure of the present application to enhance polymerase reactions by converting dUTP to dUMP.

The present specification clearly couples a structure (uridine binding motif) with a primary function (dUTPase activity), and clearly correlates that primary function with nucleic acid polymerization enhancement. The application, as filed, thus provides full written description support for the claimed invention. Accordingly, one of skill in the art would recognize that Applicant possessed the claimed invention at the time of filing of the present application. For at least this reason, Applicant requests that the Office reconsider and withdraw the rejection of claims 69, 70, and 72 as lacking adequate written description support under 35 U.S.C. § 112, first paragraph.

## II. *Conclusion*

In view of the foregoing amendments and remarks, Applicant submits that this application is in condition for allowance. If the Office believes anything further is necessary to place this application in even better condition for allowance, Applicant requests that the undersigned representative be contacted at the telephone number listed below to discuss the remaining issues.

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Respectfully submitted,  
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